

REMARKS

In the Office Action, claims 1-18 and 23 were allowed, and claims 24-27 were rejected. By the present Response, claims 24-27 are amended. Upon entry of the amendments, claims 1-18, and 23-27 will remain pending in the present patent application. All of the pending claims are believed to be allowable over the prior art references cited by the Examiner. Reconsideration and allowance of all pending claims are respectfully requested in view of the arguments summarized below.

Rejections Under 35 U.S.C. § 112

Claims 24-27 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner stated that the specification discloses that the stacked plates are bonded to form a “bonded block” and not a “bonded stack” as claimed. Similarly, the specification discloses that the “bonded block” is cut along parallel planes perpendicular to the metal layers to form a plurality of “stacks” and not “bars” as claimed. Claims 24-27 have been amended to recite the same terms as used in the specification.

Claims 26 and 27 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to supply antecedent bases to the limitations “placing the layers of dielectric material” and “placing the first and second dielectric layers” in the claims 26 and 27 respectively. Claims 26 and 27 have been amended to correct their dependency so as to supply the antecedent basis to above-mentioned recitations in the respective claims.

Rejections Under 35 U.S.C. § 102

In the Office Action, claim 24 was rejected under 35 U.S.C. §102(b) as being anticipated by Gururaja, U.S. Patent No. 6,225,728. A *prima facie* case of anticipation under 35 U.S.C. § 102 requires a showing that each limitation of a claim is found in a single reference, practice or device. *In re Donohue*, 226 U.S.P.Q. 619, 621 (Fed. Cir. 1985).

Applicants respectfully assert that the present invention, as recited in independent claim 24 is patentable over the Gururaja reference.

Independent claim 24 recites placing layers of metal on both sides of each of a plurality of plates of ceramic material, and stacking the metallized plates with metal layer facing metal layer. Each *pair* of contacting metal layers forms *a respective electrode*. The claim further recites bonding the stacked plates to form a bonded block and cutting the bonded block along parallel planes perpendicular to the metal layers to form a plurality of stacks.

The Gururaja reference discloses a composite structure 230 comprising flat wafers or strips 235 of piezoelectric ceramic, such as PZT, sandwiched between a first electrode layer 240 on one side and a second electrode layer 242 on the other side. Each set of electrodes 240, 242 is connected to a different one of end electrodes 241, 243 at opposing top and bottom surfaces of the composite. A layer of passive polymer 238 is provided between each adjacent set of electroded wafers 240/235/242 for improved acoustical matching with the body. *See*, column 6, lines 49-65; and FIG. 8A-8B.

Additionally, Gururaja discloses a method of making the composite structure 230. Wafers 235 of PZT material are electroplated (or electrodes applied by other means) on their opposing major surfaces 236 and 237. *The electroded wafers are then stacked with spacers 261 at lower edge 260, thus separating the major surfaces 236 and 237 of adjacent wafers.* The stack 262 may include tens or hundreds of such wafers. *The entire stack 262 is cast in an epoxy matrix, forming polymer layers 238 which fill the spaces between the ceramic wafers 235.* A bottom portion 264 of the stack that includes the spacers is trimmed away by a diamond saw blade. The polymer filled stack 263 is then cut into transverse sections of transducer elements 230 of the appropriate size. The transducer elements 230 are ground, with a dicing saw for example, to form channels 265, 266 in opposing ends of electrodes 236, 237, respectively. These channels are necessary so that electrodes 236, 237

will not be in electrical connection, when end surfaces 241, 243 are electroded. The channels 265, 266 are filled with polymer 238, and the opposing transverse surfaces 241, 243 are electroded. *See*, column 7, lines 24-52; and FIG. 9A-9G.

However, Gururaja fails to disclose that each pair of facing metal layers 240 and 242 forms a respective electrode. Applicants respectfully submit that the facing metal layers 240 and 242 in Gururaja do not form *an* electrode but form *opposing electrodes* connected to different end electrodes 241 and 243. *See*, e.g., FIG. 8A and FIG. 9G. Clearly, this is not same as stacking the metallized plates with metal layer facing metal layer such that each *pair* of contacting metal layers form *a respective electrode* as recited in claim 24.

The Examiner argued that the layers are considered contacting in that they are facing each other and are contacted through the epoxy polymer layer 238. Further, the Examiner pointed out that the claims do not require direct contacting and that the Applicants' specification discloses providing epoxy glue between the metal layers for bonding. Even if true, Applicants respectfully submit that, the Examiner's interpretation is not reasonable since the *facing metal layers 240 and 242 in Gururaja form opposing electrodes connected to opposing end electrodes 241 and 243*. They do not form an electrode as claimed.

At least because Gururaja does not disclose or suggest a technique to stack metallized plates with metal layer facing metal layer such that each pair of contacting metal layers form a respective electrode as claimed, the reference cannot support a *prima facie* case of anticipation of claim 24. Thus, it is respectfully requested that the rejections of claim 24 under 35 U.S.C. §102(b) be withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 25 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Gururaja in view of Busse et al. (U.S. Patent 5,359,760). Claims 26 and 27 were

rejected under 35 U.S.C. § 103(a) as being unpatentable over Gururaja in view of Busse et al. and further in view of Shoup (U.S. Patent 4,939,826).

As noted above, the Gururaja reference does not teach, suggest or disclose each and every aspect of Applicants' invention as recited in the amended independent claim 24. The secondary references do not obviate these deficiencies. Claims 25-27 depend directly or indirectly from claim 24, and are allowable by virtue of such dependency, as well as for the subject matter they separately recite. Thus, it is respectfully requested that the rejection of claims 25-27 under 35 U.S.C. §103(a) be withdrawn.

Double Patenting

Claims 24-27 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of copending Application No. 10/706,820 in view of Gururaja, Busse et al. and Shoup.

However, MPEP 804 I. B. states that

[t]he 'provisional' double patenting rejection should continue to be made by the examiner in each application as long as there are conflicting claims in more than one application *unless that 'provisional' double patenting rejection is the only rejection remaining in at least one of the applications.* (Emphasis added.)

Applicants respectfully submit that, in the present case, the provisional double patenting rejection will be the only rejection remaining once the rejections under 35 U.S.C. § 112, second paragraph; 35 U.S.C. § 102(b); and 35 U.S.C. § 103(a) are withdrawn based on the arguments above. Accordingly, Applicants request that the Examiner reconsider and remove the obviousness-type double patenting rejection of claims 24-27.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this Application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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